# Trading on Nifty with Technical Indicators

The motive of this project is to make customized trading models based on historical data from which we can initiate trades with more confidence and informed decisions

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Data Wrangling and Exploration

Nifty Movement (15 min samples) : Nifty per minute prices are resampled to 15 min frequency.

Below is the Nifty Index prices, with 4 columns Open. High, Low and Close. For our trading we will only consider Close price to make all the trades.We can see a clear uptrend in the Index with some corrections along the way.
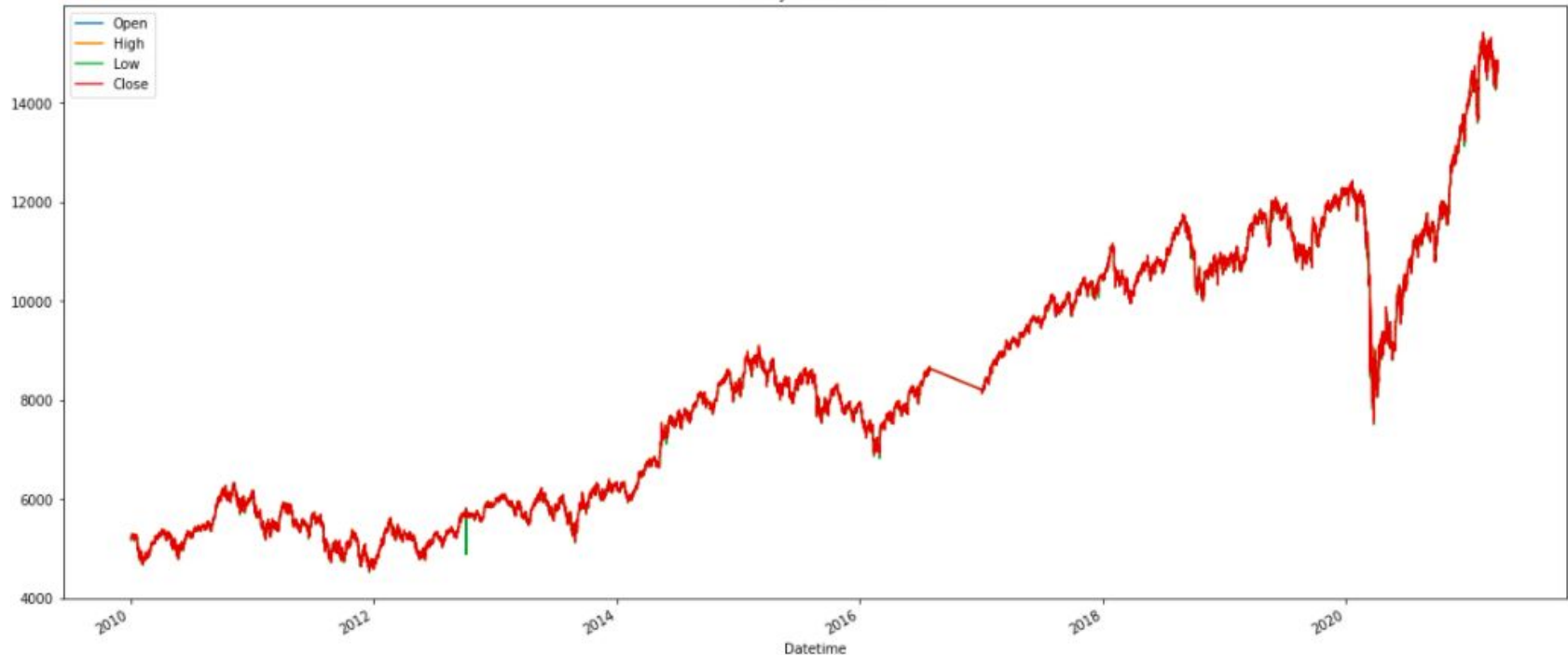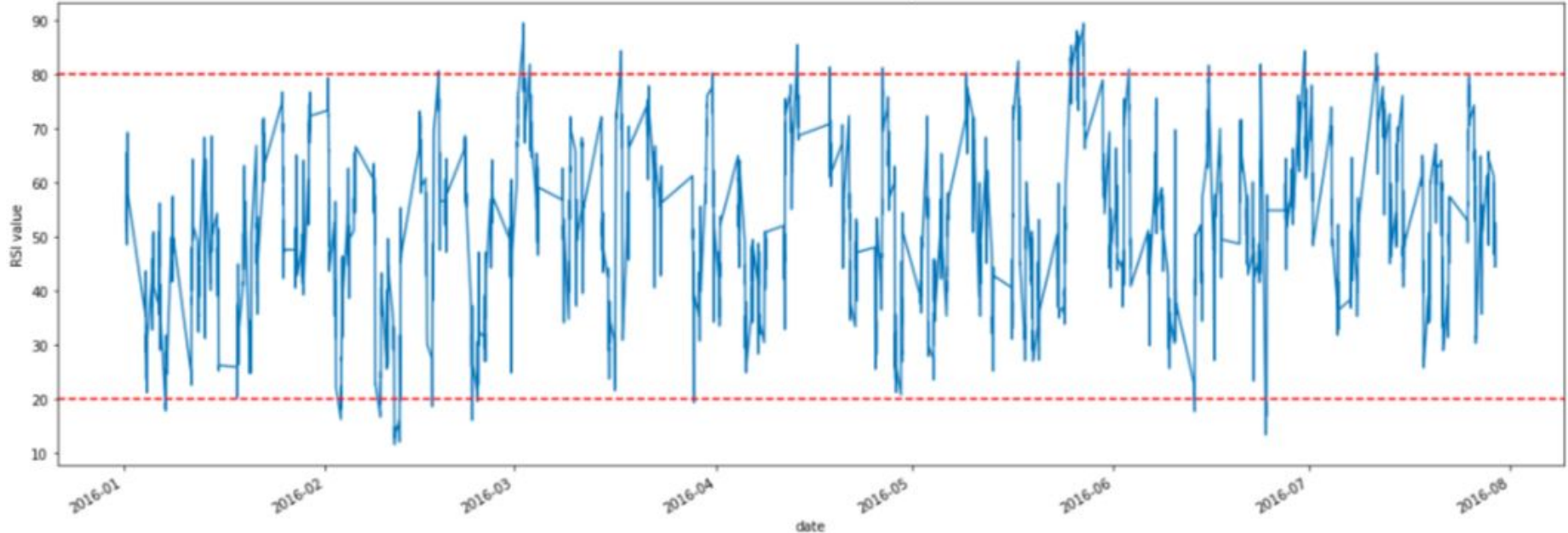
Indicators on Nifty Close Price

RSI Indicator

Below 20 is the oversold area where we should look to buy and above 80 is overbought area where we should look to short. We can see we will get few but profitable trading opportunities if we trade by solely on RSI index. We can also tweak the threshold values to trade more.

Bollinger Bands

When the price of the asset breaks below the lower band of the Bollinger Bands,, prices have perhaps fallen too much and are due to bounce. On the other hand, when price breaks above the upper band, the market is perhaps overbought and due for a pullback.

Bollinger Bands on NIFTY Close prices(30 days)
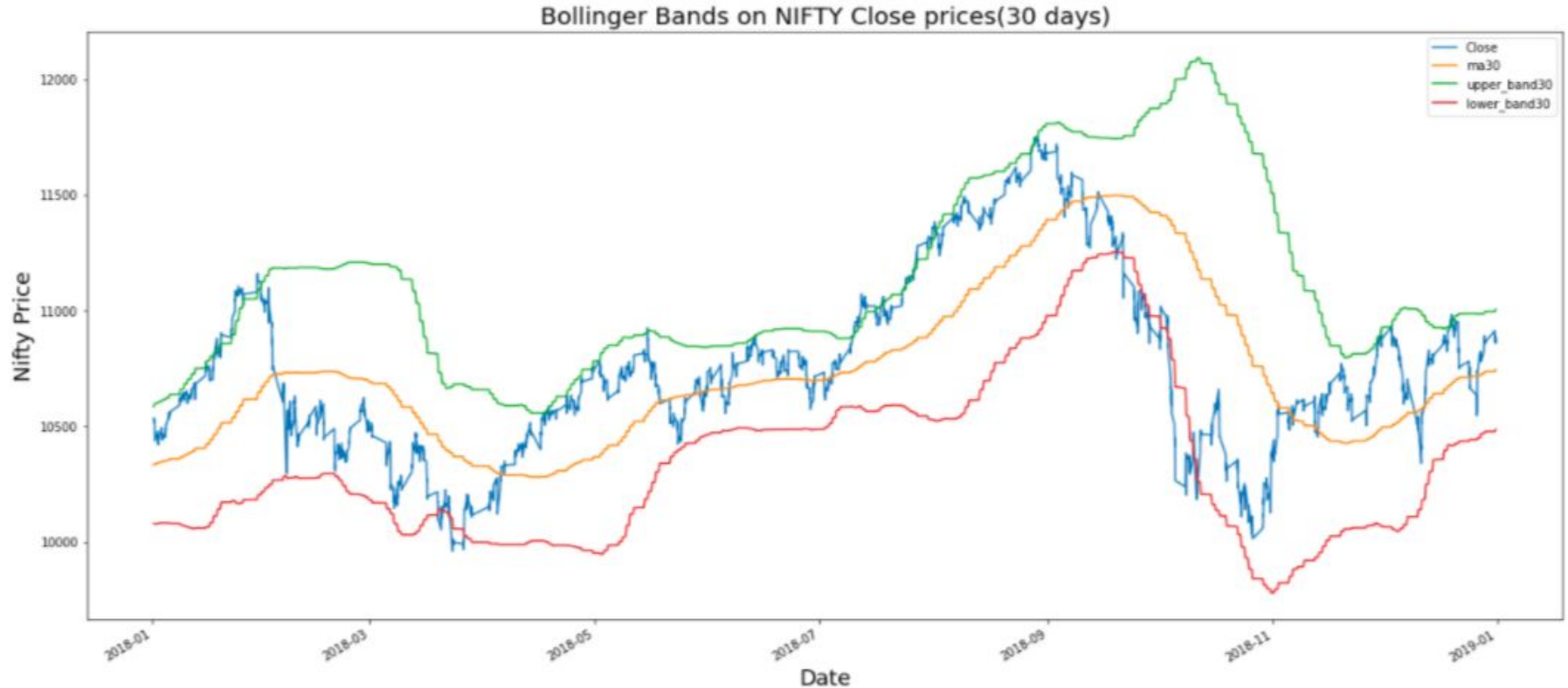
MACD Indicator

Traders watch for a short-term moving average (blue line) to cross above a longer-term moving average (red line) and use this to signal increasing upward momentum. This bullish crossover suggests that the price has recently been rising at a faster rate than it has in the past, so it is a common technical buy sign.
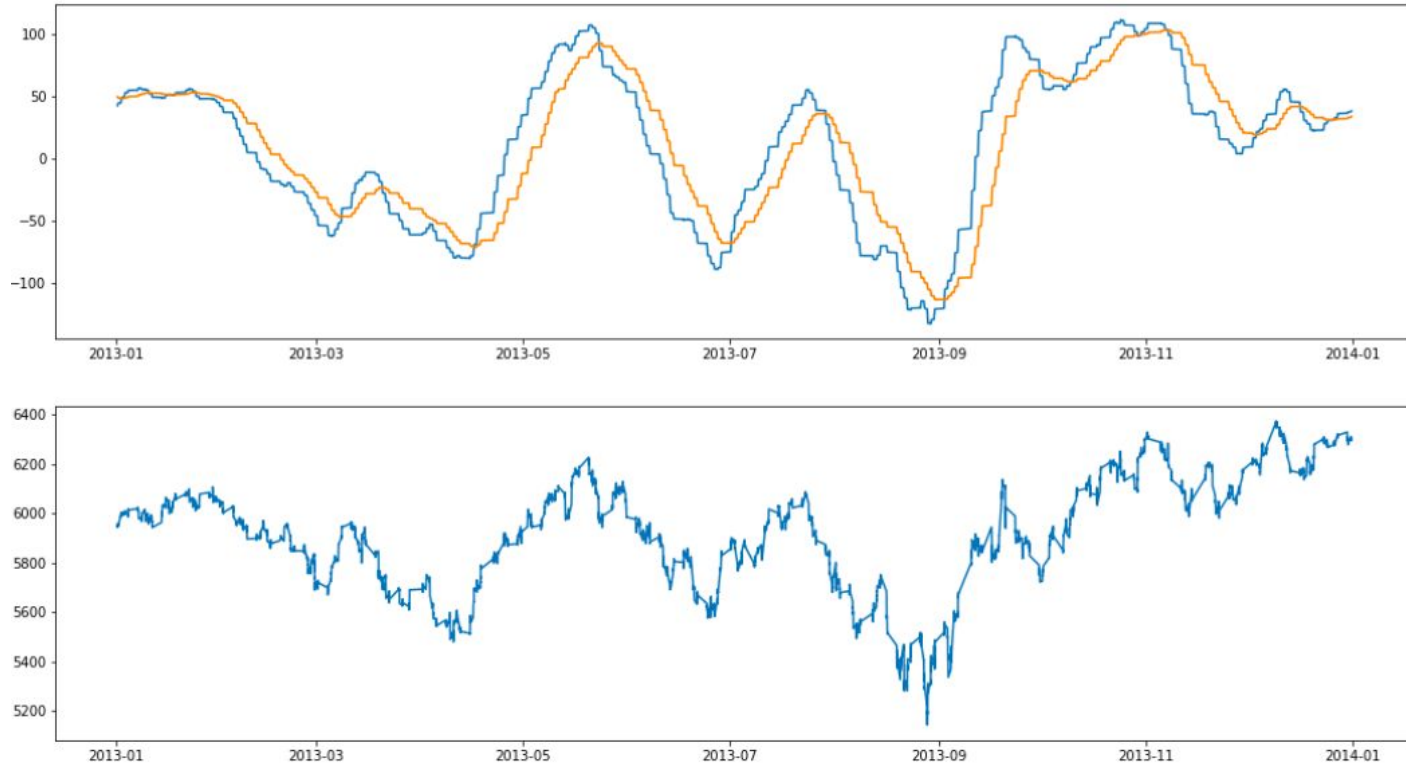
AOI (Awesome Oscillator Indicator)

When AO crosses above the Zero Line, short term momentum is now rising faster than the long term momentum. This can present a bullish buying opportunity.

When AO crosses below the Zero Line, short term momentum is now falling faster then the long term momentum. This can present a bearish selling opportunity.


AOI vs NIFTY Close prices
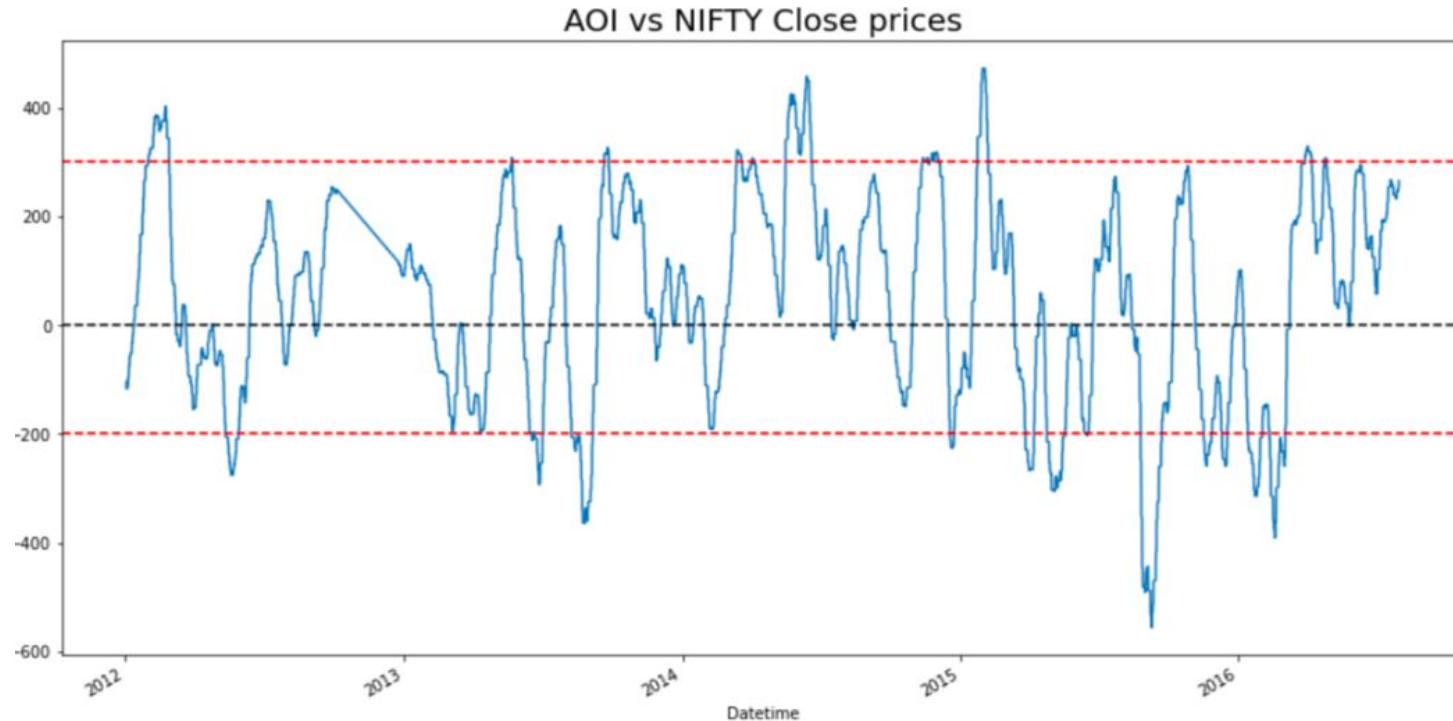
KAMA Indicator

One of the uses of Kaufman's Adaptive Moving Average is to identify the general trend of current market price action. Basically, when the KAMA indicator line is moving lower, it indicates the existence of a downtrend. On the other hand, when the KAMA line is moving higher, it shows an uptrend. As compared to the Simple Moving Average, the KAMA indicator is less likely to generate false signals that may cause a trader to incur losses.

Stoch RSI Indicator

A StochRSI reading above 0.8 is considered overbought, while a reading below 0.2 is considered oversold. On the zero to 100 scale, above 80 is overbought, and below 20 is oversold. Overbought doesn't necessarily mean the price will reverse lower, just like oversold doesn't mean the price will reverse higher. Rather the overbought and oversold conditions simply alert traders that the RSI is near the extremes of its recent readings.

When the StochRSI is above 0.50, the security may be seen as trending higher and vice versa when it's below 0.50.
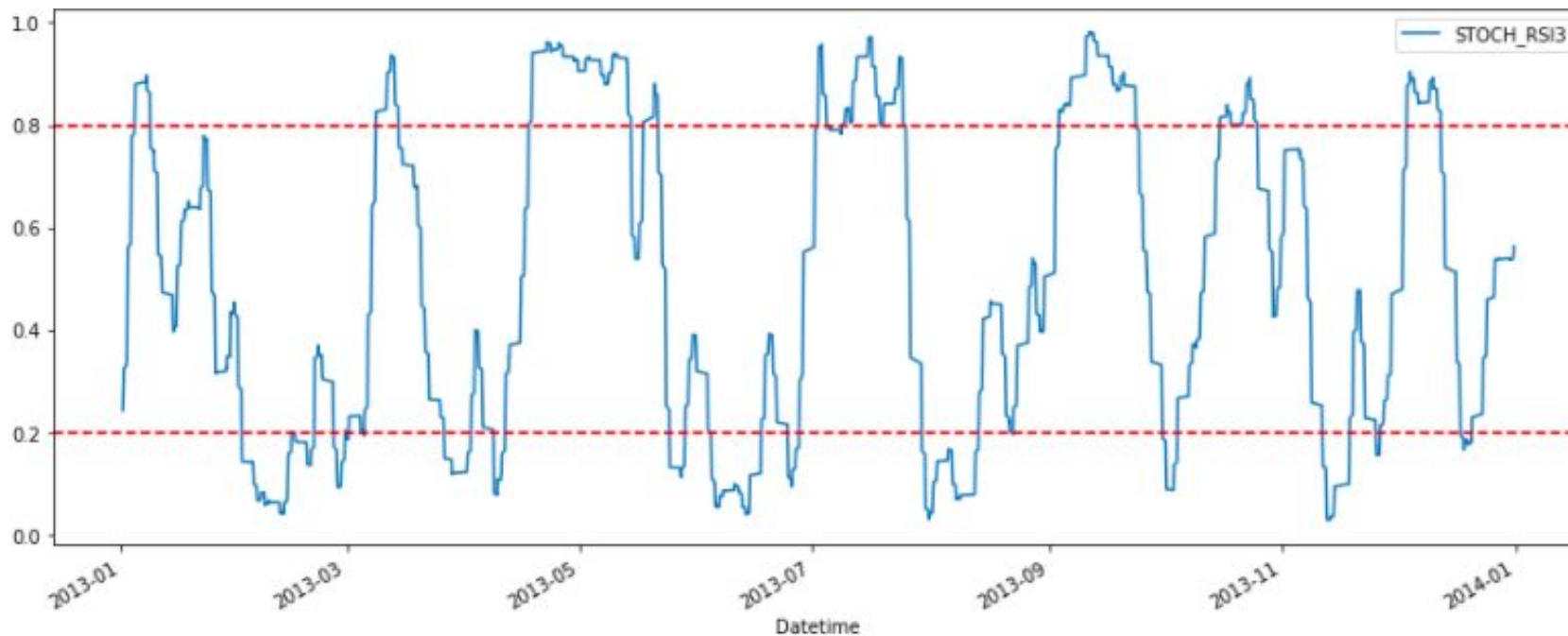
True Strength Indicator (TSI)

Mark extreme TSI levels, on the asset being traded, to see where overbought and oversold is. Being oversold doesn't necessarily mean it is time to buy, and when an asset is overbought it doesn't necessarily mean it is time to sell. Traders will typically watch for other signals to trigger a trade decision. For example, they may wait for the price or TSI to start dropping before selling in overbought territory.
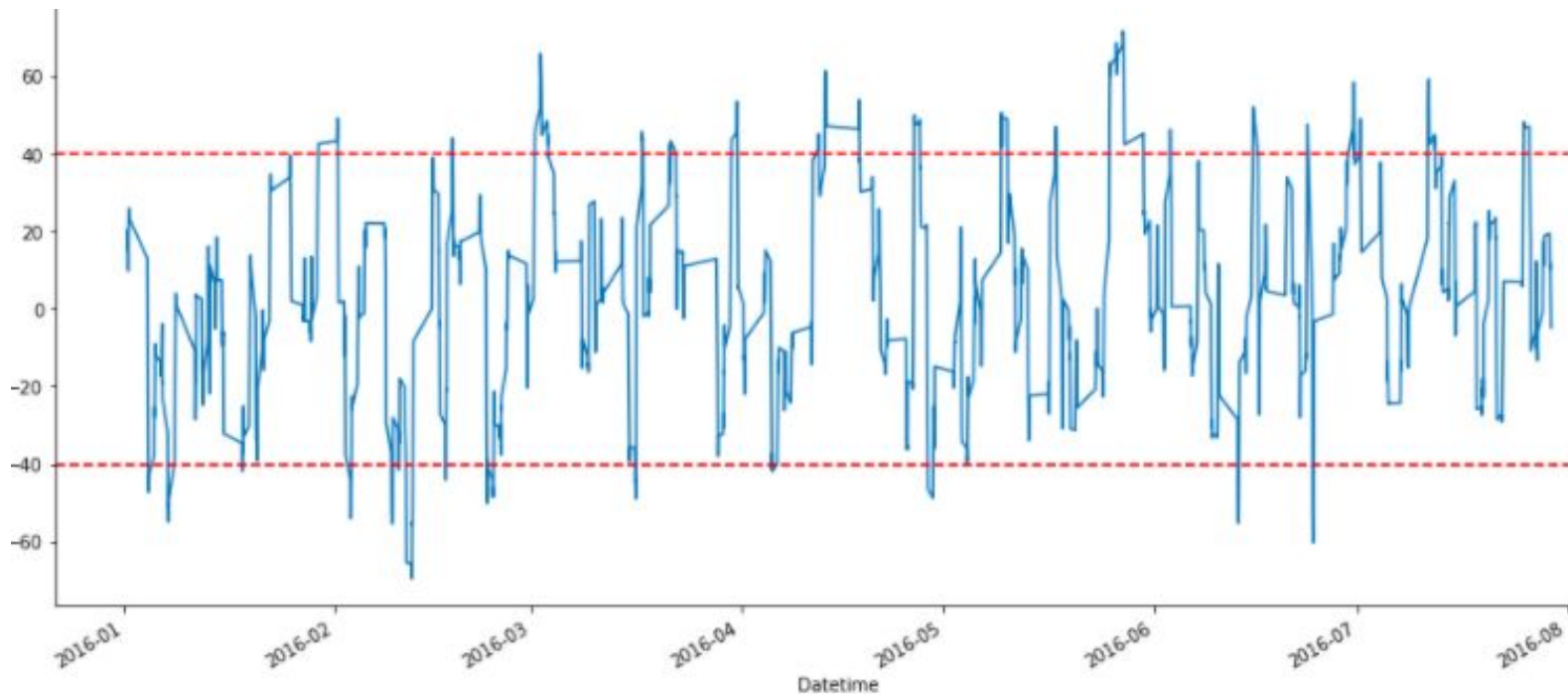
Donchian Channel

The most common approach is to regard a breakout above the upper band as a positive signal, and a breakout below the lower band as a signal to go short.

There are several ways that you can go about to exit a trade following a breakout trade.

Aroon Indicator

The lower the Aroon Up, the weaker the uptrend and the stronger the downtrend, and vice versa. The main assumption underlying this indicator is that a stock's price will close regularly at new highs during an uptrend, and regularly make new lows in a downtrend.

Crossovers can signal entry or exit points. Up crossing above Down can be a signal to buy. Down crossing below Up may be a signal to sell.

# Profit and Loss by Trading on each Indicator

Trade with RSI Indicator: If we trade purely on the basis of RSI index, we will have a cumsum profit of around 2800 at the end of 2018, if we trade an entire lot of nifty index (75) , then we would have made a profit of 2,10,000 bucks.

Nifty Trades Profits with RSI Indicator
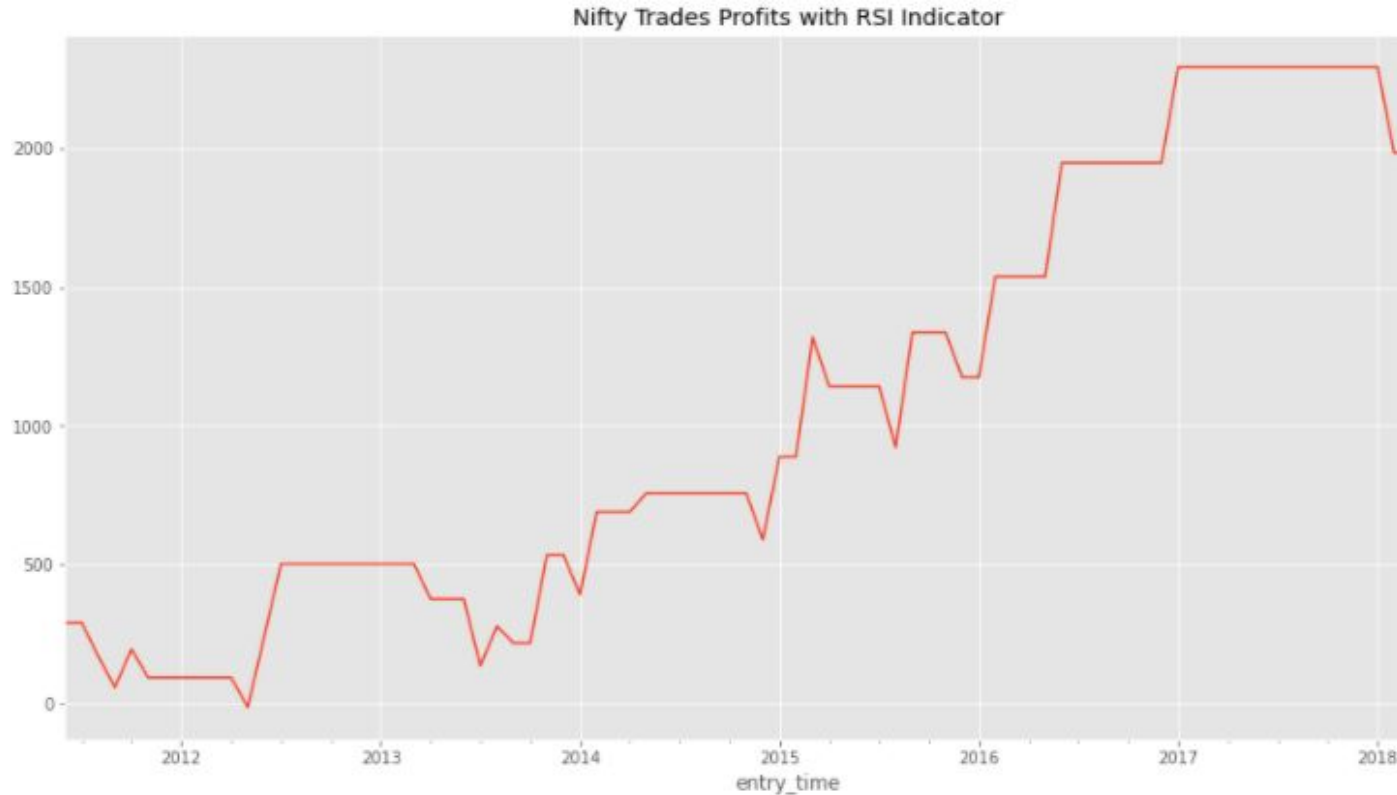
Trade with MACD Indicator

MACD indicator alone is giving us some decent profits, we'll check later combinations of MACD with other indicators.
Before the pandemic, profit for an entire lot = 75*5000 = 375,000 (based alone on macd indicator)

Nifty Trades Profits with MACD Indicator
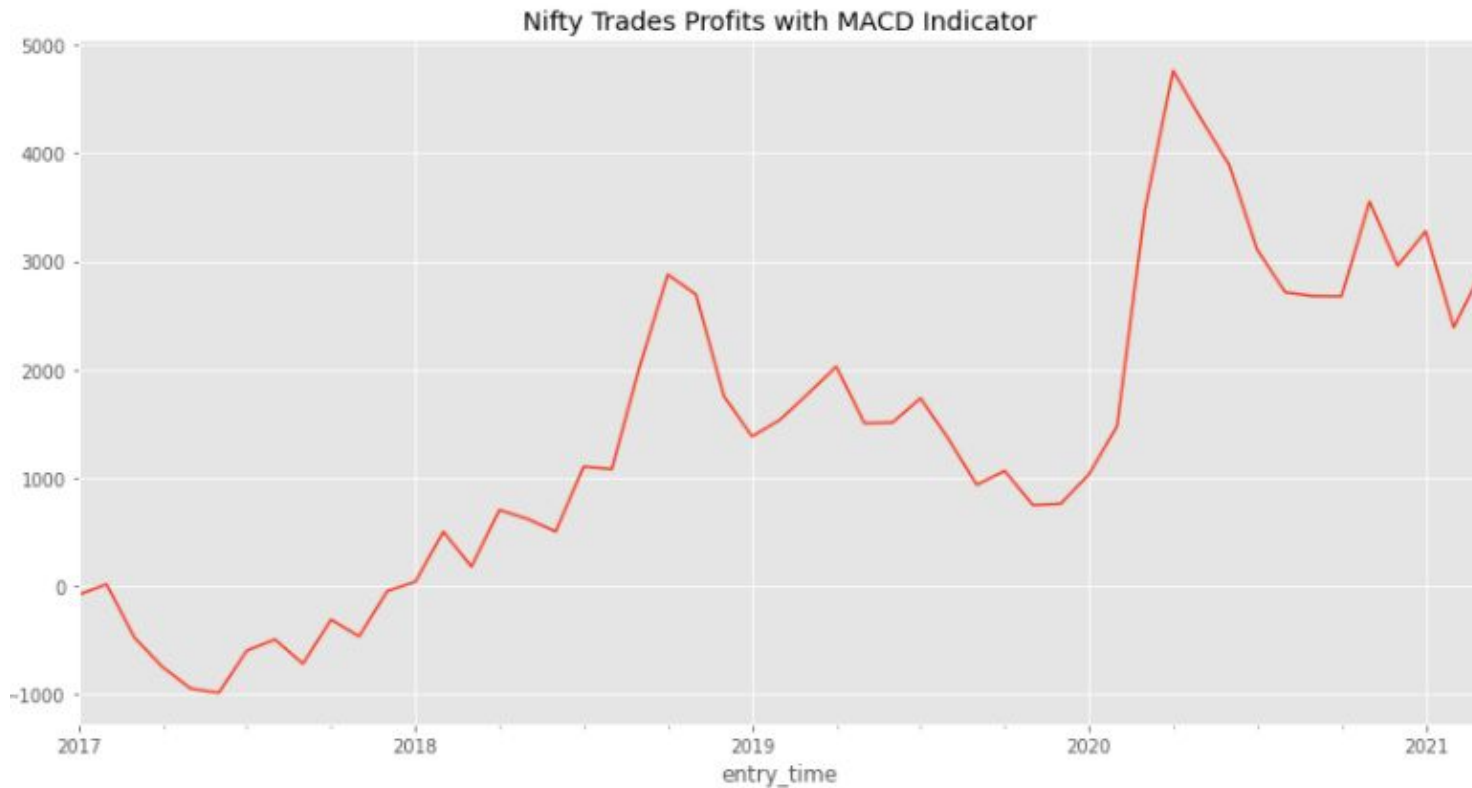
Trades with AOI Indicator

The below graph shows that the AOI indicator was working fine before the Pandemic, during the pandemic, the price moved sharply downwards in 2 months and then recovered quickly in the next 6 months.


Nifty Trades with AOI Indicator
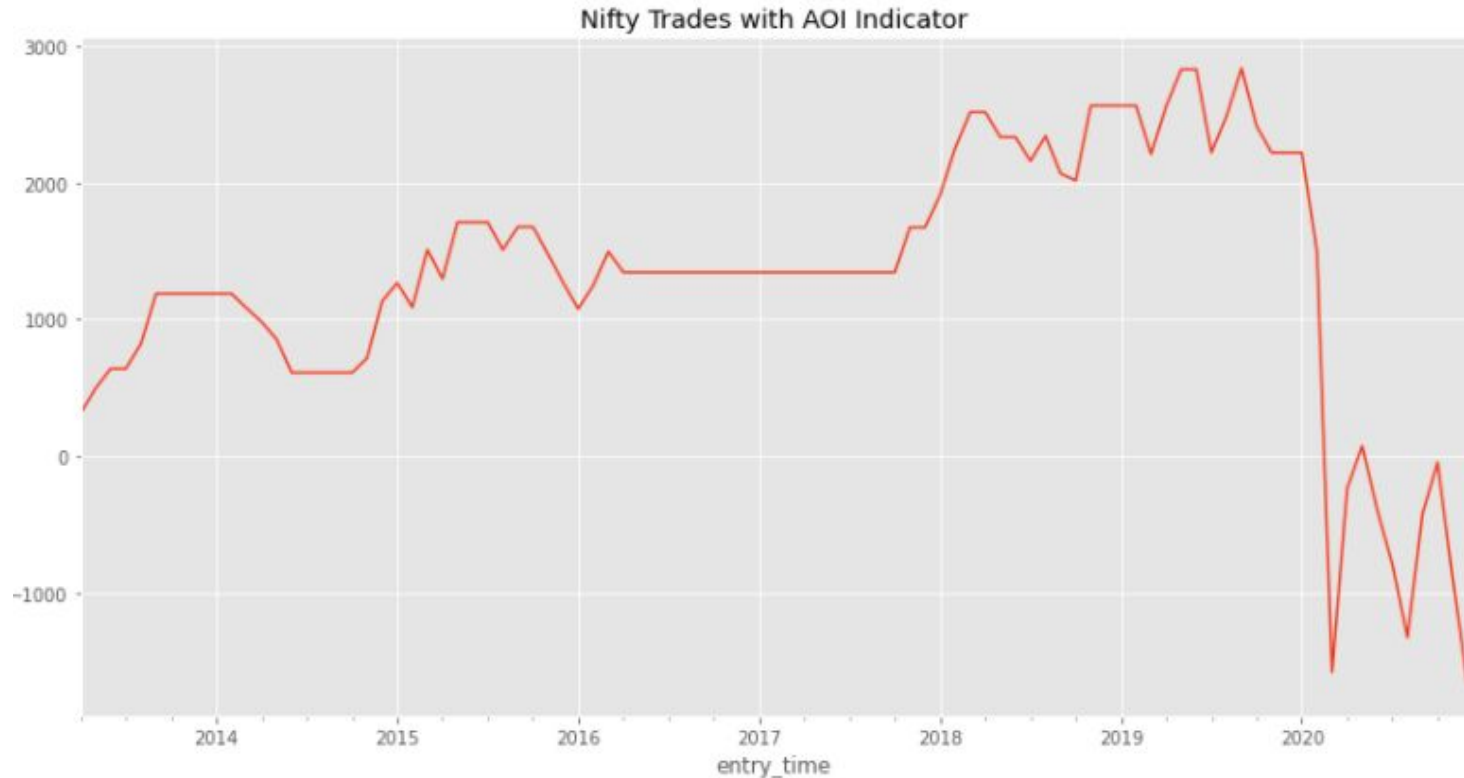
Trades with KAMA Indicator

Surprisingly this lesser known Indicator has shown better results over the last 5 years than the classic MACD and RSI.

Profit for one lot, 75*8000 = 600,000 (6 lakh INR)
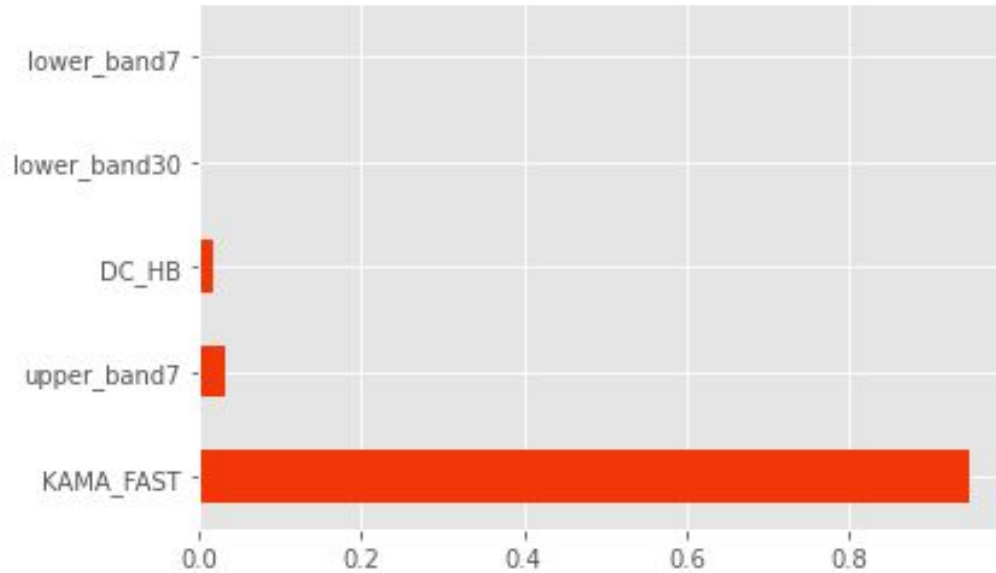
Nifty Trades with KAMA Indicator
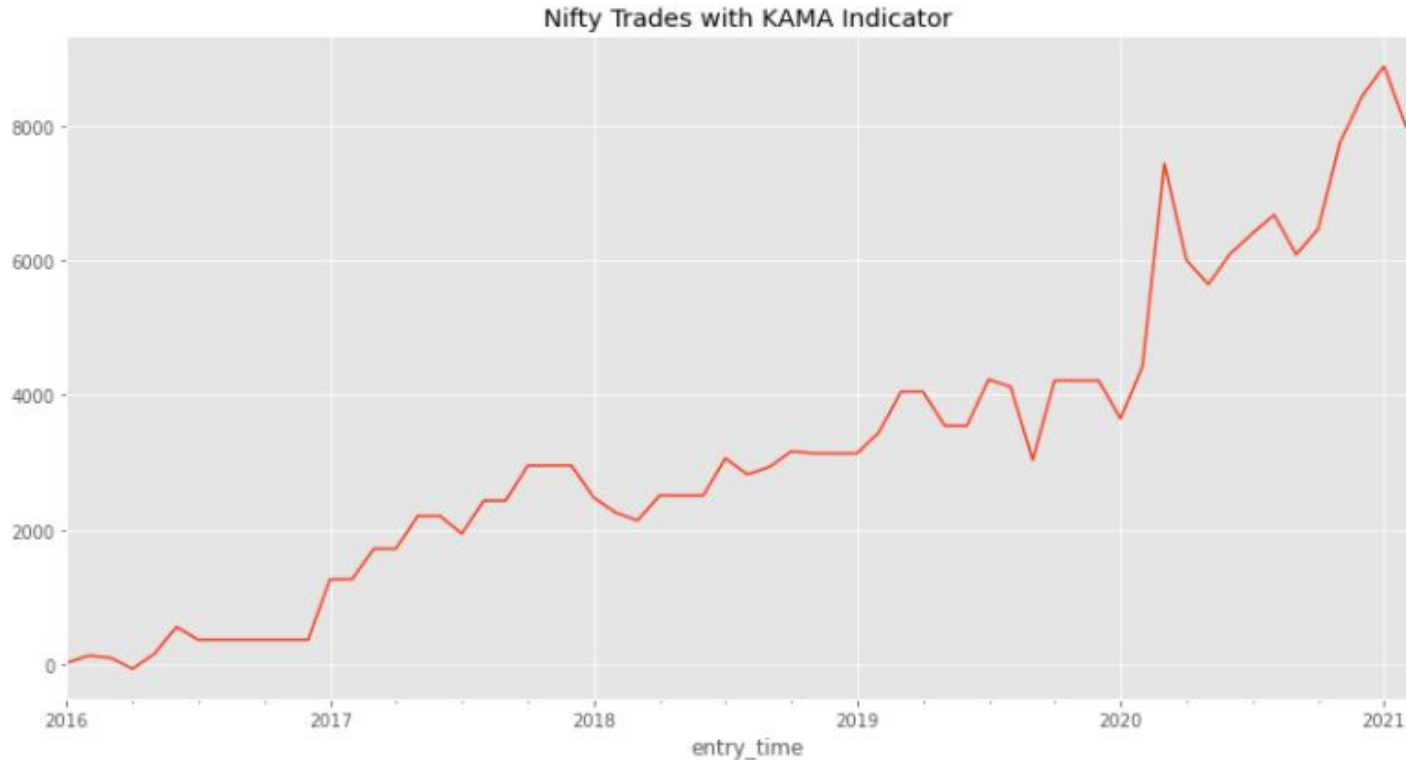
Trades with Aroon Indicator

Most of our indicators performed better after 2016-2017 because that's when the real bull market started for Nifty index, before that the momentum was slow but now India is attracting a lot of investors due to its constant high earnings growth and potential to grow further.


Nifty Trades with Aroon Indicator
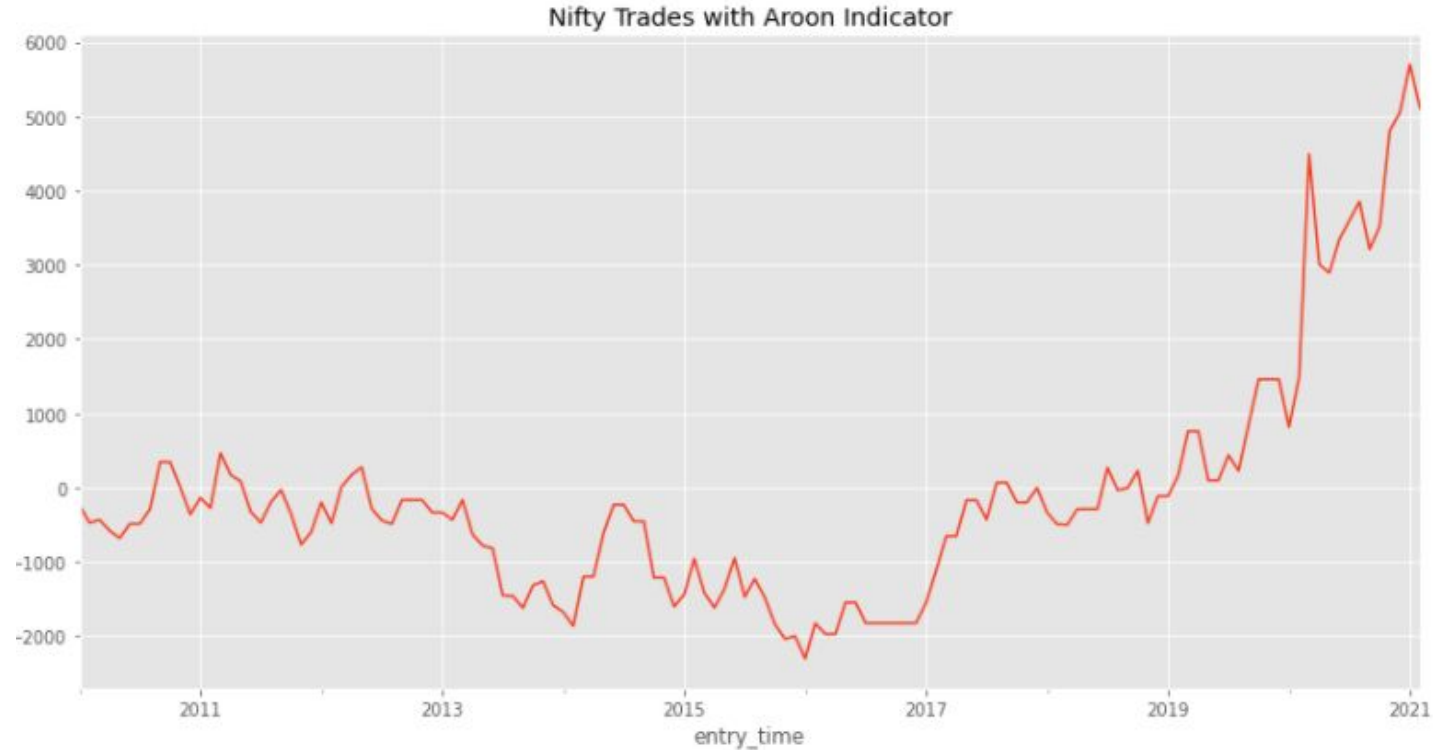
Feature Importance Using Decision Tree

Kama fast is the most important feature by decision tree which proves that the profit and loss by kama fast indicator were not by chance.

Trades with KAMA + RSI Indicator

From below profit and loss graph we can say that Kama individually performed better than when combined with rsi. Although we can say from the zigzag movement that profit as loss is restricted and shows less volatility.

Nifty Trades with RSI + KAMA Indicator
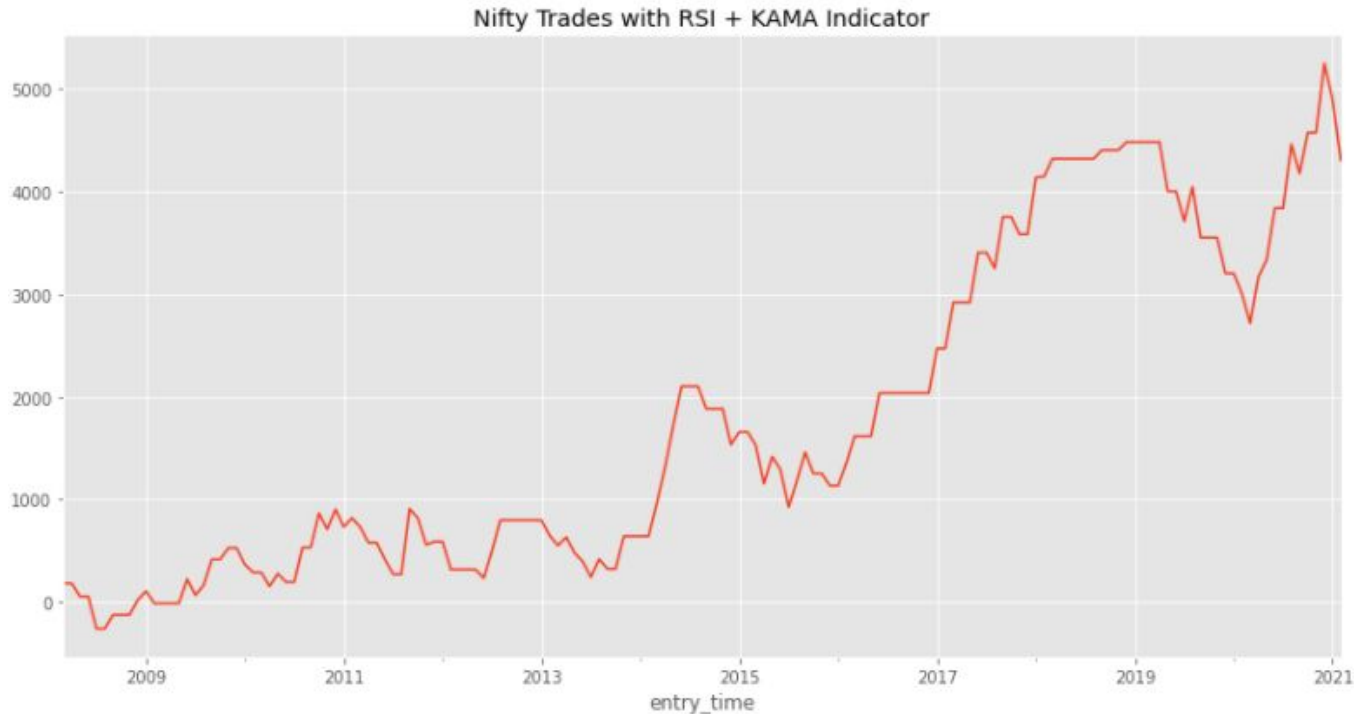
Trades with KAMA + MACD Indicator

The combination of Macd + Kama Indicator performed amazing especially during the market crash due to pandemic.

Almost around 9000 profit during the last months of 2020, if we traded in nifty futures based on the above model, our profit would have been 9000*75 = 6,75,000 INR

Nifty Trades with MACD + KAMA Indicator
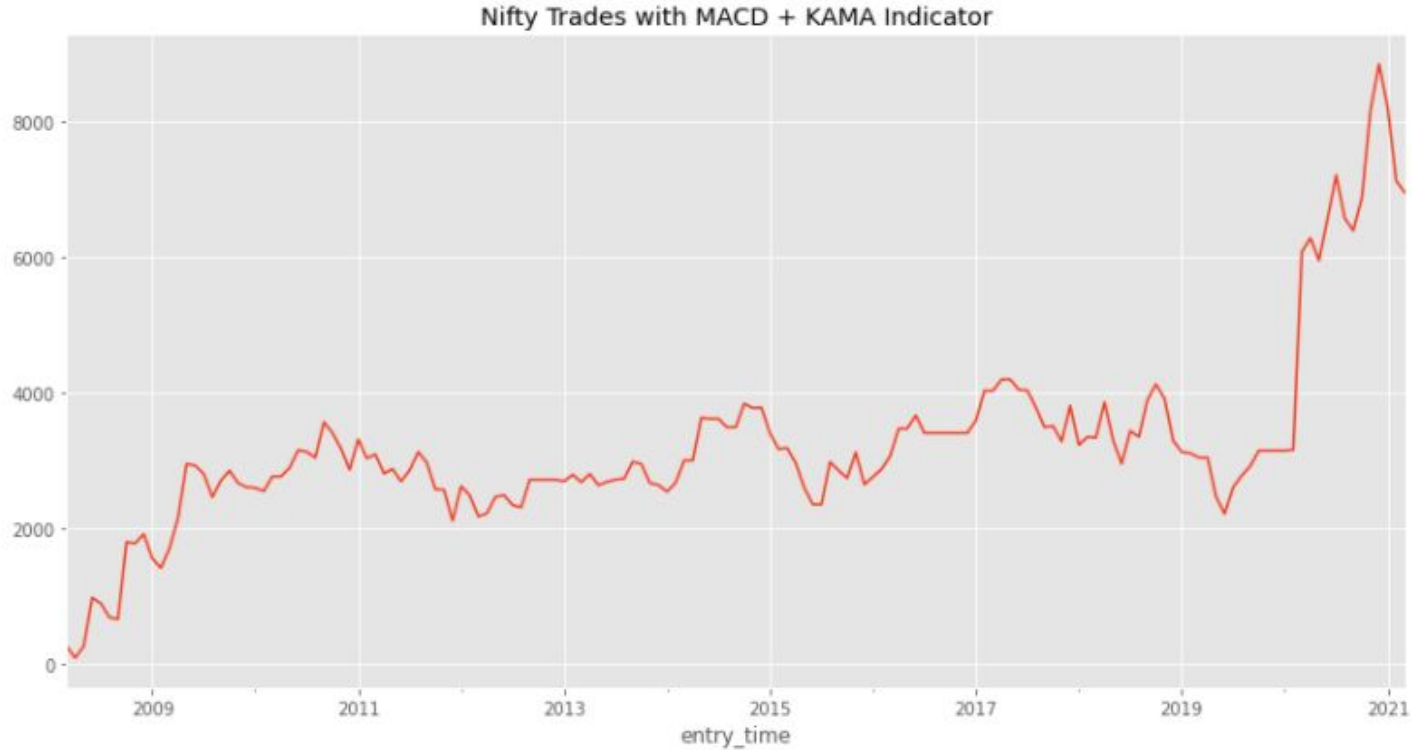
Trade with ATR + MACD + KAMA

Similarly we can try other combinations of Indicators, also we can tweak the thresholds of Indicators to find the results.

Nifty Trades with ATR + MACD + KAMA
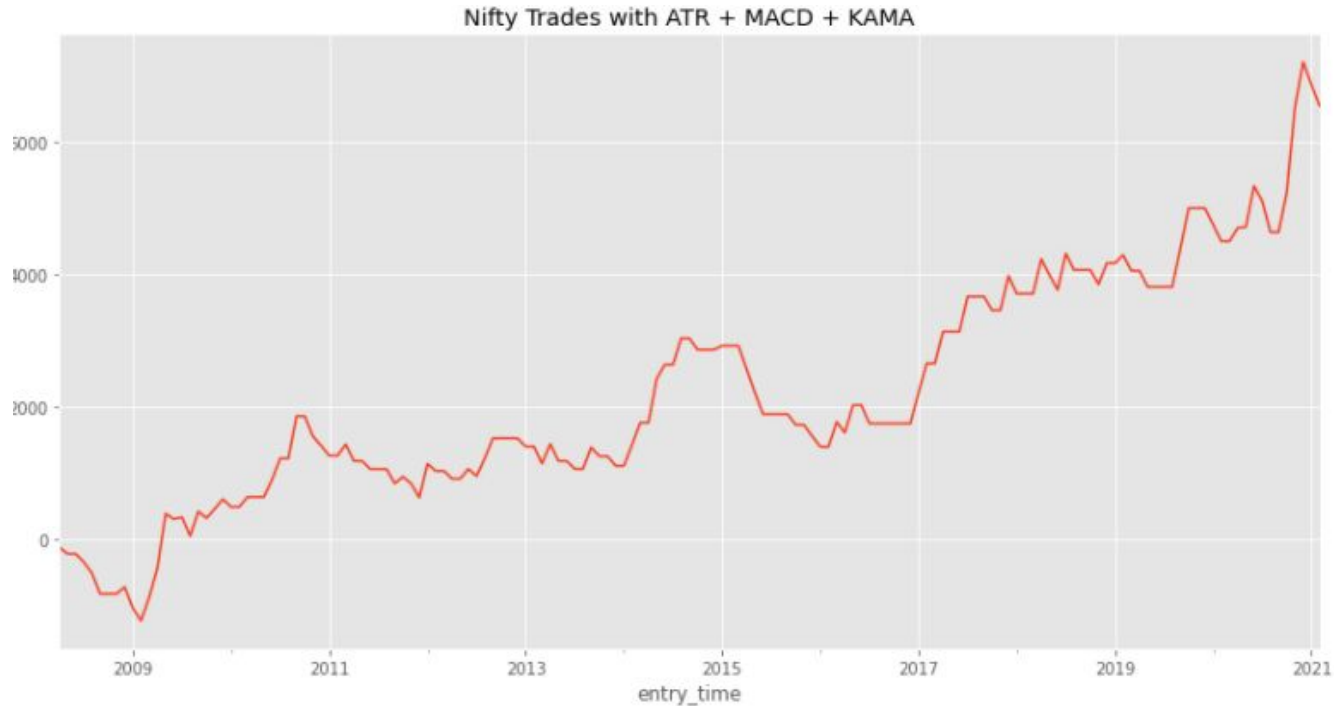
Additional Notes:

We can make other indicator combinations. You can make your own indicators, make different combinations, with different thresholds/targets/stop loss.

Although Kama indicator individually performed really well but the combination of Kama and Macd Indicator gave us the most profit in trades along with the decrease in volatility.

The estimate profit by trading a lot of Nifty index over 11 years was around 6.75lakh INR.

Thank you! Any Queries?